CELERY FOR PROFIT

GREINER

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CELERY FOR PROFIT.

GREINER.

CELERY FOR PROFIT.

AN EXPOSÉ OF MODERN METHODS IN CELERY GROWING.

BY T. GREINER,

AUTHOR OF "ONIONS FOR PROFIT," "HOW TO MAKE THE GARDEN PAY," "THE NEW ONION CULTURE," "PRACTICAL FARM CHEMISTRY," ETC.

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Celery for Profit.

I.

GLITTERING GENERALITIES.

RAMBLING REMARKS, PROSPECTIVE AND RETROSPECTIVE.

What a remarkable change—that which the last decade has witnessed in our celery industry, both in regard to production and consumption! Only ten years ago celery was a rarity and a luxury. The majority of rural people hardly knew it by name, and, perhaps, had never seen or tasted a stalk. The professional market gardener grew it in a limited and laborious way, mostly for city consumers who could afford to pay a good price for the article, and then the supply lasted only during a short period of each year.

How different now! You find a little patch of celery in every complete home garden. In various parts of the country it is grown by tens, by hundreds, even by thousands of acres. The tables of every hotel, down to the fourth and fifth rank, of every boarding-house, no matter how modest, are provided with celery almost the whole year round. People have learned to like the taste of the vegetable, and they *will have it.* They can *afford* to have it, too, even if they must buy it, because the supply now is large and prices have come down to moderate figures.

Similar changes have, within the memory of persons not yet of middle age, taken place in the production and consumption of strawberries, grapes, tomatoes, and other

Library

fruits and vegetables. All these changes are hopeful and satisfactory signs of the times. The American people are getting to be more and more weaned from the flesh-pots of old Yankeedom, and into the habit of substituting therefor the fruits of the promised land. This means a steady move in the right direction—away from an excessive, almost exclusive meat diet, and toward civilization and refinement.

Notwithstanding all the abundance of celery in our markets, I claim that we do not yet grow enough to reach fully around. Notwithstanding the moderate and often low prices at which celery can now be purchased in almost every town, I claim that celery growing can be made more profitable than any other branch of gardening.

In explanation of the one claim, I assert that too many rural people are yet without a full home supply, and in that of the other, that the introduction of the White Plume celery, and of improved methods of culture, are rendering celery growing so simple and cheap, that the prices now obtainable, low as they are, will repay the cost of production many times over. In fact, it has become now as easy to grow celery as to grow carrots or potatoes.

The introduction of the White Plume marks the beginning of a new era in celery culture, just as that of the Prizetaker onion marks that of a new era in onion growing. In all its consequences it has brought us a complete revolution in methods.

The home grower now need fear no great difficulty, no unusual or excessive labor, and hardly a failure. The newer kinds and methods enable the market grower to produce a number of times the quantity per acre that was grown by the old practices, and in some cases even two successive celery crops on the same piece of ground.

The old methods now cease to be profitable. They are

too cumbersome, too troublesome, too laborious, too expensive. The grower must, of necessity, adopt the newer improved ways of culture or be left behind in the race. The times of digging deep trenches for celery are past. Even the more recent but un-American system practiced by the Kalamazoo people will not prevail much longer.

If you have a little patch of ground, no matter how small, that is used for gardening purposes, you are (or should be) a grower of celery. If you grow celery, even to the smallest extent, you will be interested in the following pages, and it will pay you well to study the information found in them. I have tried to give plain and complete directions, without side issues or useless flourishes. May they help the reader on the way to full success in the production of one of the choicest, most palatable, and most wholesome vegetables that were ever brought under cultivation.

T. GREINER.

La Salle, N. Y., Autumn of 1892.

II.

THE HOME GARDEN CROP.

GOOD RESULTS WITH LITTLE LABOR.

VALUE OF THE CROP.—THE EARLY HOME SUPPLY.—RAISING THE PLANTS —SETTING OUT.—BLANCHING BY BOARDS.—THE LATE HOME SUPPLY.—RAISING THE PLANTS.—PLANTING.—BLANCHING.

My friends should not accuse me of losing sight of my text. I promised to write on "celery for profit." Do not imagine that this does not include the home garden crop. If the reader has never been bountifully provided with good celery, or has never observed "confirmed celery eaters" "at work," I wish he could see the quantities of this vegetable that are brought upon my table, and notice the keen enjoyment with which all members of my family take hold of the crisp stalks. I would not miss the privilege of having a full home supply of this choice delicacy for many dollars. Many persons, probably a large majority, cannot appreciate the full force of this statement, simply because they have never or seldom had a chance to find out what a fine and enjoyable thing celery, when in perfection, really is. They may have had a taste of the stale stuff ordinarily found in the retail markets—wilted, tough, stringy, strong in flavor—and, of course, they do not like it. The solid, brittle stalks and hearts of true chestnut flavor and crispness are an altogether different thing.

Nine out of every ten of the many persons who claim that they "do not like celery" I would willingly engage to cure forever of this dislike, simply by letting them have a few tastes of the crisp, nutty centre-stalks of well-grown, freshly-gathered celery.

Thus far I have spoken only of the enjoyment and comforts found in a good home supply of good celery. Much might also be said about the sanitary, if not medical, effects of a celery diet. This vegetable is generally recognized as a nerve tonic and nerve stimulant. If its free use makes you stronger, healthier, it may save you doctors' visits and outlays for medicines. If it saves expense, it has a money value, and is profitable. And then, health is worth more than money.

But besides all this there is some real, shiny, jingling cash in the home garden crop of celery. The man, or woman, or boy, who has succeeded in growing some nice stalks, always has neighbors who, when they hear of it or see it—may this be early in the season or late—will want some. It has been so in my experience, and I never knew it to be otherwise anywhere. They will want it, and be willing to pay even a better price for it than the grower could secure through the regular channels of city trade. It is true the amounts may be small—a dime or a quarter now and then—but even small amounts come handy and help to bear the expenses of running a home garden. Every little helps, you know. Really, why not make the home garden self-supporting by selling some of the surplus vegetables that even a quarter-acre vegetable patch produces? If you raise good garden stuff of any kind, I am sure there will be somebody in your vicinity willing and anxious to get some of it at a reasonable price.

The Early Home Supply.

The first celery from my home garden usually comes upon my table about or shortly after the middle of July. Any home grower, however unskilled, can have it at that time just as well as myself, for, as I stated before, early celery, after the plants are grown, is as easily produced as

carrots, and much easier than many other of our leading vegetables.

Sometimes I *buy* the plants needed for the early crop. White Plume is the variety you want for this purpose. Commercial growers will furnish them to you during May, the proper time for setting them out, at $4.00 per 1000. A couple of hundred plants will give an abundant supply to even a large family, and, perhaps, some to spare for the neighbors.

Usually it is safer and cheaper to grow the plants than to buy them; and this is the course I prefer, and always try to take. Invest five or ten cents in a packet of White Plume celery seed. Along in the latter part of February fill a flat box, or a large flower-pot, with nice, clean, mellow loam, well pressed down and firmed. Apply water enough to make the soil quite moist; then sow the seed, either broadcast or in narrow rows, rather thickly, and sift just a little sand or fine soil over it, firming well afterward. Cover the box or pot with a single thickness of light paper or cloth to keep the soil dark and moist, and set it into the kitchen or sitting-room window, or in any other place having a comfortable but moderate temperature. A hot-bed, with moderate bottom heat, would be a still better place for it, but not every home gardener can have it thus early in the season.

About ten days after sowing, the seeds will begin to sprout. Remove the paper or cloth cover and gradually get the young plants accustomed to the light and air. Always water promptly, never letting the soil become thoroughly dry, yet at the same time carefully avoiding the opposite extreme.

Next comes the performance which professional gardeners call "pricking out." This means the first transplanting of the young seedlings into other boxes or "flats," for

the purpose of giving them more and uniform space, and of encouraging root growth. From two to four small boxes—each say sixteen and one-half inches long, nine inches wide, and four inches deep—will hold all the plants necessary for any average family's home supply of celery. In place of the flats the plants may be set out directly in a hot-bed, or even a cold frame.

The tiny seedlings transplant easily. Set them one-half or three-quarters of an inch apart, with rows about three inches apart, which will give from fifty to seventy-five

FIG. 1.

PLANTS IN FLATS, TWO INCHES APART IN ROW.

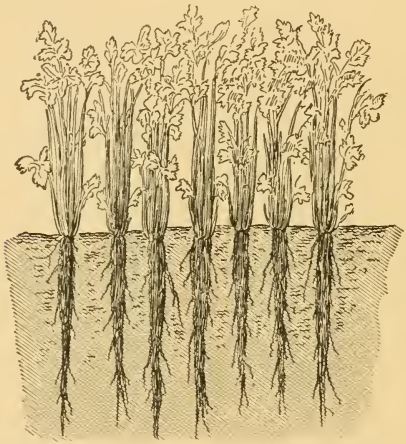
plants to the flat or to an equivalent space in the frame. Water well, and keep them lightly shaded for a day or two, should the weather be very bright. This is about all the care they will need until their final transfer to the open ground, unless they should grow very rank, when it will be necessary, or at least advisable, to shear or clip off a large part of the tops. Spindling plants are not wanted.

Neither should we go to the opposite extreme. When plants are given much space, their roots will develop, as

shown in Fig. 1. We thus obtain fine-looking, short, stocky plants, and they will be all right, when we take them up with the soil adhering to their roots, and set them out with some care.

In Fig. 2 we see plants crowded together to one-half inch apart in the row, as I have advised you to set them in the flats or frames. In this case the roots grow long and fleshy, like parsley roots. These plants can be taken up

FIG. 2.



PLANTS IN FLATS, ONE-HALF INCH APART IN ROW.

with less care, and set out in the open ground more rapidly and more conveniently than the others. The fleshy roots contain reserve forces upon which the plant can draw during the time when it tries to get a new hold in the soil. They also reach down further into the stratum of perpetual moisture than the finer, sprawling roots of the plants in Fig. 1. In short, the advantages seem to be mostly on the side of the plants grown more closely.

Having once secured good plants—such as shown in Fig. 2—with which to begin outdoor operations, the battle is about half won. Any spot, any vacant row in the well-manured garden may be used for our purpose. Where the garden was plowed "in lands" or beds, or when furrows were left purposely for surface drainage, these furrows may be utilized, or a furrow or two may be opened on a vacant

FIG. 3.

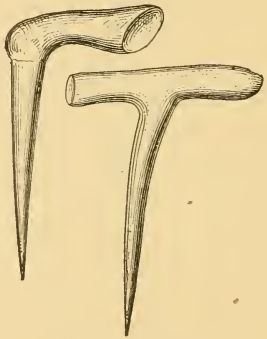
A PLANT PROPERLY TRIMMED.

strip, or between crops of quick growth that we know will be off by July, such as early peas, radishes, early lettuce, bunching onions, etc. Fill these furrows with fine, rich old compost (if containing a portion of poultry manure, all the better) and then mix this compost and the soil well together, either by means of the plow, cultivator, or even

with the spade. Firm the soil well, and smooth the surface with hoe and rake, and you are ready for setting the plants, which should always be done as soon as possible after the ground is prepared and while still moist.

Stretch a garden line a couple of inches to one side of where the row of plants is to stand, or make a mark for the row in the most convenient way. Now get the plants ready. Pull them up out of the flats or frame; put them in bunches of convenient size, and cut off the ends of both root and top, as illustrated in Fig. 3. Plants thus trimmed

FIG. 4.



WOODEN DIBBERS.

handle well, and usually stand the ordeal of transplanting better than plants with all the tops, and the long, slim root-ends left on.

In nice, mellow loam, sandy and especially mucky soils, setting out celery plants is easy work, and the index finger may be used for making the openings; but I always prefer to use a small dibber, similar to those shown in Fig. 4. You can easily whittle one out of a piece of dry limb, preferably of hickory or apple tree. This will answer the

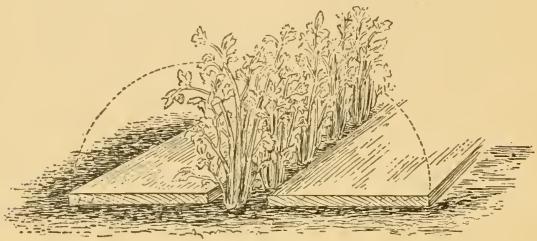
purpose as well as any dibber you could buy. Set the plants about five inches apart in a straight line, pressing the soil firmly about the root of each plant. If you want to know whether the work was done right, take a good hold of one of the leaves and pull. If the plant comes out of the ground, it was not set firmly enough; if the leaf breaks without loosening the plant, all is right.

Remember, however, that you cannot and must not set out plants when the ground is sticky. The soil is in best condition for the operation when only just dry enough to easily crumble to pieces between the fingers. Then we could altogether dispense with watering the plants after setting, especially during cool and cloudy weather. If the soil is dry, however, the air warm, and the sky clear, the application of half a gill or so of water to each plant, shortly after setting them out, is only a reasonable precaution and demand. It is easily and quickly done, requiring only a very few bucketfuls of water for the few hundred plants set out by the home gardener, and I strongly advise that it be done in *all* cases, except in cloudy weather or when rain is expected. Shading and similar precautions, serviceable in setting plants for the later crops, during July or August, are hardly ever needed in setting those for the early crop during May, as the soil then is usually moist and moderately cool, and evaporation not excessive.

Not much in the way of after-cultivation is required—a little hoeing, as other crops receive it, is about all. Early in July the plants will be large enough for bleaching. I never "bank" or "earth up" the early crop, but prefer to bleach it in the simplest manner by means of a few old boards, 8 to 12 inches wide, such as can be found lying about on almost any place. There is no need of "handling" or tying, either. Just take two boards, and lay one on each side of the row (see Fig. 5); then take hold of

the outer edges, and turn them up together and against the row (see Fig. 6). That is all. In a week or two you may begin to use the celery. The row, when boards are on,

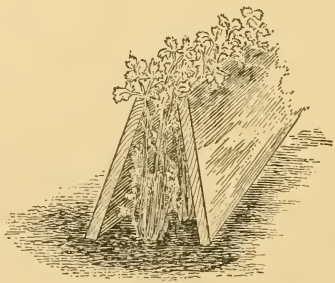
FIG. 5.



BOARDS READY FOR SETTING UP AGAINST THE ROW.

then looks as represented in Fig. 7, and, with boards thrown back, as represented in Fig. 8. As fast as the plants are taken up, and boards become available for use elsewhere, they are moved along to a row, or part of row, not yet

FIG. 6.



BOARDS IN POSITION FOR BLEACHING.

blanched. Thus the same boards may be used a number of times in succession, and the supply of freshly-bleached celery kept up until the late celery is ready for the table.

If you have only narrow boards, say five or six inches wide, they will answer the purpose, if you set them up as directed, and, after a few days, draw five or six inches of

FIG. 7.

ROW OF CELERY—BOARDS ON.

FIG. 8.

ROW OF CELERY—BOARDS THROWN BACK.

soil to the row from each side, replacing the boards on top of this.

The Late Home Supply.

The late home crop should be ready in October and last until spring. Again, the first thing should be to make provisions for the plants. It is better, safer, cheaper to raise them than to buy them. Really first-class plants cannot often be bought, and when you *do* buy them, you are not sure whether you have a good kind or not. Sometimes in May one can get, at little cost, small seedling plants (the thinnings) from a celery grower in the vicinity, and these may be set out in well-prepared soil, one-half or three-fourths of an inch apart in the row, kept well cultivated and free from weeds until wanted for setting out to make the crop.

My advice, however, is to buy a ten-cent packet or an ounce of seed, selecting Giant Pascal as first choice, and New Rose or some other good pink variety as second. These two are the very cream of the celeries, and to my taste about at the head of the list in quality.

There is no difficulty about raising the plants for any one who knows how to prepare a garden spot for early radishes, early beets, lettuce, onions, etc. They all require a nice smooth bed of rich, mellow ground. The rows for these vegetables are usually about twelve inches apart. This is all right. Use one of the rows among the onions or radishes, sowing seed, at the very earliest moment after the ground can be prepared (March or April), thinly in a shallow mark, as you would sow carrot seed; cover lightly if at all, and firm well, either with a garden roller, if you have one, or with the feet.

The seed seldom fails to germinate promptly when thus treated. As soon as the plants can be seen, stir the ground about them with a wheel-hoe or common hoe, and pull up all weeds as fast as they appear in the row. The

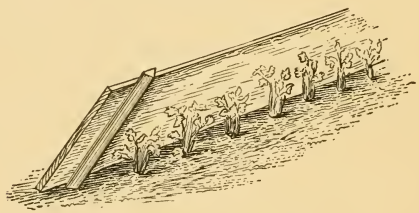
plants should be thinned at the very start, and no more than twenty-five to fifty be allowed to remain to the foot of row. Water in very dry weather, but do this thoroughly when you do it at all. Give one good soaking that will last, rather than a mere sprinkling repeated every day, which is of no earthly use.

Should the plants grow very rank, and especially if crowded, make it your business, some time in June, to shear or clip off about one-half of the tops. The final planting-out should be done during July, as early as convenient, where the seasons are short, and up to August, or even later, in the Middle States. Prepare the plants, and set them out in rows exactly as directed for the early celery. If you have well-grown plants to spare, some neighbor will gladly take one hundred plants or so for forty or fifty cents. Now, we meet one difficulty not encountered in the other case, namely, a hot and dry season. The soil may be parched and dust-dry, and rains may fail us for weeks. Under such circumstances it is advisable to apply water freely to the row or rows a few hours before the plants are to be set, and again after they are set, and, if possible, to shade the plants slightly for the first few days after their transfer. A light sprinkling of fine hay over the plants will provide all the shading required and usually prove of material benefit. Another way of providing shade may be seen in Fig. 9. Drive little stakes slantingly on the south or southeast side of the row, a few inches from the line of plants, and lean boards up against them. After the plants have become well established, these boards can then be removed. Rapid growth is now to be encouraged in all possible ways, especially by stirring the soil frequently and keeping the weeds down. Applications of water, liquid manure, or soapsuds will be of especial service in this direction. A part of this late crop will probably be

wanted for the table fresh from the patch, although the early crop may well be made to hold out up to the first or middle of October. The bleaching process for this part should be begun early in September, and may be carried on in somewhat the same fashion as directed for early celery, except that the boards ought to be not less than ten to twelve inches wide. Earthing up, as will be described in next chapter, may give still better results, and is especially desirable when the plants are intended to be left in open ground for use in November and December.

The other part, intended for winter storage, requires no bleaching, but it should be handled or boarded up a few

FIG. 9.



SHADING THE PLANTS.

weeks before it is to be taken up, in order to make the plants grow upright and compact. Late in October or early in November—at any rate before the temperature has at any time gone much below the freezing point, and surely not below twenty-three or twenty-four degrees Fahrenheit—lift the plants with a spade, leaving some soil adhering to the roots, and set them rather closely together upon the floor of a moist cellar, or upon a layer of moist soil put into a large box. The bleaching process will then be finished during winter, and the plants may be used as wanted. Try to keep the roots moist and the tops dry; in this, with a

cool temperature and a trifle of ventilation, we have all the "secrets" of keeping celery.

During the past season I have come across an entirely new way of growing celery, not only for commercial purposes, but also in the home garden. You will find in this a most valuable and true short-cut. Look it up in the chapter on "The New Celery Culture." Let no reader of this book fail to give this simple method a trial. There, truly, he will find "good results with little labor."

III.

WHERE THE PROFIT LIES.

CELERY FOR THE SUMMER MARKET.

CELERY GROWING IN KALAMAZOO.—CHANCES ELSEWHERE.—GROWING THE PLANTS.—HOTBEDS AND GREENHOUSES.—FLATS IN CUCUMBER FORCING HOUSE.—THE WATER BENCH.—PREPARING THE GROUND.—SETTING THE PLANTS.—CULTURE.—HANDLING.—CELERY HOE.—CELERY HILLERS.—METHODS OF BLANCHING.

Don't tell me that the competition of the Hollanders around Kalamazoo, Mich., is so ruinous that the business of growing early celery elsewhere holds out no further promise of financial success. True, this competition is formidable. The methods adopted by these people and their success—if such it is—are based on a system of drudgery to which American vegetable growers will not readily submit, namely, on the employment of the whole family—father, mother, grandparents, and children of all ages and sizes—keeping all of them at work every minute of long working days. Even then their profits are not commensurate to their efforts, and if they were forced to employ able-bodied working men at full prices for their various operations, and then sell their crops to the "shippers" as they do now, it is doubtful whether the industry would long survive.

The only real advantage which the Kalamazoo Hollanders seem to have over growers elsewhere possessing suitable celery soil is the reputation of the Kalamazoo product; but this is offset by serious disadvantages, especially (1) the high tax they are compelled to pay to middlemen and express companies, in consequence of

a wholesale production which demands the whole United States for a market, and calls for long-distance shipments, and (2) the great local demand for manure which results in prices far more favorable to the seller than to the buyer and user.

Indeed, there are thousands of places in the United States where a much better combination of favorable conditions for the celery grower can be found than in Kalamazoo, and where the celery industry can be established on a safe and American basis. But let us make no mistake. We must not imagine that it will be safe to engage largely in growing "celery for profit," unless the conditions of soil and market are unusually favorable.

It is true that celery will thrive on almost any kind of soil if only rich enough. Yet to make its culture profitable, we must be enabled to systematize the work, and reduce the labor account to a minimum by the substitution of horse-power and improved implements for hand labor, and, if possible, to surround the crop with additional safeguards against failure by artificial irrigation. In the first place, we must have soil that is easily worked, such as sandy muck or meadow land, clean, deep, rich, mellow, and well worked. There should also be a never-failing supply of water available for irrigation. Next we need plenty of good manure at moderate prices, and finally a good near market.

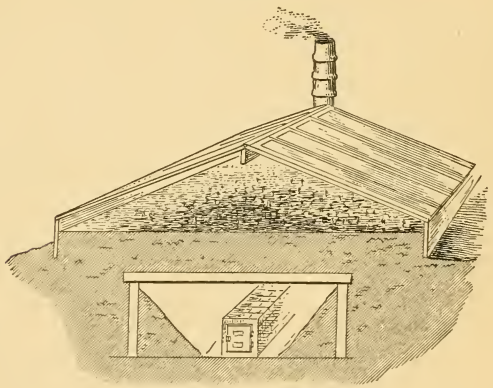
Wherever a combination of these conditions is found, celery is just the crop that offers superior opportunities for profit, and the summer crop still more than the fall and winter crop. Early celery on irrigated land is produced more easily and cheaply than later celery. A full stand is easily secured, as May is much more favorable to the operation of setting plants than July or August. Then the early crop is pretty much out of the way of fungous diseases; it

is easily bleached, needs no storage facilities, and usually brings a better price than the other. Indeed, the advantages seem to be pretty much on the side of the summer celery, at least after the plants are secured.

Growing the Plants.

I have already spoken of this in the preceding chapter. The same general principles, which govern the production of the plants for the home garden, are applicable also to

Fig. 10.

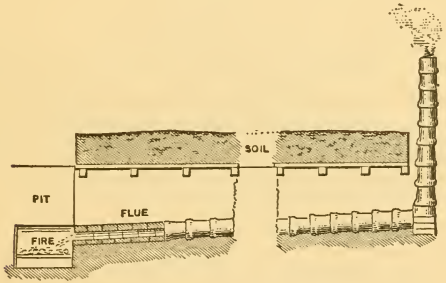


Fire Hotbed. Cross-Section.

the similar operations of the commercial grower. White Plume and Golden Self-blanching are the only varieties that can here come in consideration. The selection of variety, of course, must always depend on the whims and fashions of the local market. Golden Self-blanching, with its rich, golden-yellow stalks, is a favorite in some localities; but it grows almost too feebly, and is too easily affected by disease to be serviceable for general culture. The White Plume must still be considered the leading early sort.

Start the plants under glass in February. A hotbed with moderate bottom-heat will answer. The commercial grower, however, should have better facilities than just an ordinary manure hotbed. The least that he ought to have is a fire hotbed that can be started up at any time when wanted, even in the coldest weather. Cross- and length-sections of such structure are given in Figs. 10 and 11. The bed is formed, in the simplest manner, by a double row of ordinary hotbed sashes, which rest on a strong frame and meet in the centre on a ridge plank. Underneath the soil, which is supported by heavy planks and strong timbers, is

FIG. 11.



FIRE HOTBED. LENGTH-SECTION.

the flue. Use fire-brick for the fireplace, and for eight or ten feet of the flue next to it. Terra-cotta pipe will do for the rest of the flue and for the chimney.

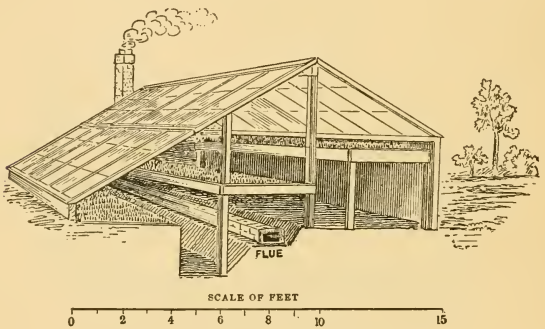
A single hotbed sash affords space enough to start twenty to thirty thousand plants, and will require one and one-half or two ounces of seed sown broadcast. After sowing, firm the soil well over the seed, then sift an eighth-inch layer of fine loam over it, and keep slightly shaded for a week or more, especially during bright weather.

The soil used in all cases for growing the plants should

be a fine, rich, porous loam, such as can be found in old gardens and old pasture lands; or, still better, a black, sandy muck, that has been in cultivation for at least a number of years.

The possession of a greenhouse, or forcing pit, renders the job of growing the plants much safer and more convenient. People who shun the expense of putting up a regular greenhouse, but who have plenty of hotbed sashes on hand, may build a forcing pit, as shown in Fig. 12, and heat it with an ordinary, cheaply-constructed flue. Seed,

FIG. 12.

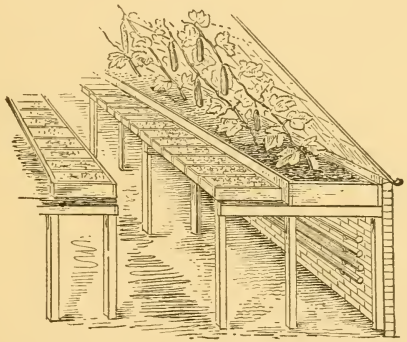


FORCING PIT, ROOFED WITH HOTBED SASHES.

of course, may be started in bench-beds, in same manner as advised for the hotbed. The use of flats, however, seems to me a much handier method. I always secure the flat boxes, in which my nearest grocer receives his canned meats. They are sixteen inches long, nine inches wide, and four inches deep, and just as if made purposely for starting all kinds of early vegetable plants. Fill them with the prepared loam to within half an inch of the top; water thoroughly, sow the seed, and cover it lightly with sifted soil, as before directed. Then the flats may be piled up

on top of each other in some convenient corner, or under the benches in the greenhouse, or in any other place where the atmosphere is moderately moist, and the temperature between 50 and 70 degrees Fahrenheit. Leave them thus for from five to seven days; then take them down, water again, and pile them up as before, to be left from five to seven days more, or until the seeds begin to sprout, when the flats must be placed singly upon the benches and lightly shaded for a little while longer. Even if you have no greenhouse you can start the plants in the same way, to

FIG. 13.



ROW OF FLATS IN CUCUMBER FORCING-HOUSE.

be "pricked out" in the hotbed or cold frame later on, thus avoiding the necessity of starting your beds so inconveniently early in the season.

Houses used for forcing cucumbers afford plenty of space for growing vegetable plants in flats. The benches may be arranged as shown in Fig. 13, which will need no further explanation. The cucumber plants require only narrow benches, and the space in front of them may just as well be utilized for the accommodation of a row of flats as not.

For starting celery and other fine seeds, the "water-

bench," as described by the Ohio Agricultural Experiment Station, seems to me to deserve special mention. This bench is made with matched flooring laid in white lead, so as to be water-tight. The ends and sides, which should not be more than two inches high, are also made water-tight. It may be of any dimensions desired and in any part of the greenhouse. It may even be placed underneath the regular plant benches, say at least a foot below the bottom of the upper one, so as to give room to pass flats in and out easily.

"The use of these water-benches," says Prof. W. J. Green, "is to water seed just sown and young plants recently transplanted, without the application of water to the surface of the soil. Seeds are sown in flats having about two inches depth of soil; these flats are then transferred to the water-bench, and watered by sub-irrigation, which is accomplished by letting into the water-bench sufficient water to soak the soil in the flats quite thoroughly, but not enough to make it mortar-like or pasty. Small plants are transplanted into flats and treated in the same manner.

"The flats in which seeds are sown may be kept in the lower water-bench until the seeds germinate and the young plants appear, but if kept in a dark place much longer than this, injury would, of course, result. In an upper water-bench young plants may be kept as long as desired, and watered by sub-irrigation as often as need be. This method of watering is satisfactory and saves labor. Not only can the soil be thoroughly and evenly watered in this manner, but there is no danger of washing out seed or of knocking over young plants."

When the young seedlings are about one and a half inches high, they are ready for "pricking out" in other flats. The process has already been described in Chapter

II, and will need no repetition. Make the rows three inches apart, and set the plants in them one-half inch apart.

The proper "hardening off," previous to the final transfer of the plants to open ground, should never be neglected. It is a matter of some importance. Set the flats into an open cold frame, or into some sheltered spot outdoors for a week or so, and by the end of that time they will be ready for setting out.

Setting the Plants.

The first step in the outdoor operations is the preparation of the ground. This we expect to be already rich and well supplied with organic matter. Still, we can safely put on additional broadcast dressings of good compost, and they should be heavy, say from fifty tons upward per acre, if we depend on them for making the crop. Old cow manure is considered to be a most excellent fertilizer for celery. I like broadcast application of the barnyard manure much better than putting it in a furrow right under the row, as the roots of the plant go quite a way in search for food, and the latter will not be out of reach of the plants, even if distributed all over the ground.

Then comes plowing. In the mellow soil, which alone we consider suited to "celery growing for profit," this is an easy job. Yet all possible pains should be taken to have it *well* done. Harrowing comes next. Going over the ground a few times with a smoothing harrow, each time in a different direction, will probably be sufficient. At any rate, make the ground smooth and even. Then mark out the rows, four feet apart if the plants are to be bleached by earthing, or three feet apart if by boards. In the latter case even less distance between the rows would answer. The marks need not be deep nor wide. Any

ordinary one-horse corn marker, which marks out three or four rows at a time, may be used. By all means, however, have the rows straight and uniform.

Now, also, is the time to apply commercial fertilizers, especially the so-called high-grade, special vegetable manures, if their use is desired either to make up for a deficiency in the applications of compost, or to heighten the general effect. I like to use them any way, or in their place ashes, bone meal, dried blood, cotton-seed meal, sulphate of potash, etc. The complete mixed fertilizers, containing about four or five per cent. nitrogen, eight to ten per cent. phosphoric acid, and six to eight per cent. potash, may be scattered in a wide strip over each row, at the rate of 1000 to 2000 pounds. Most of the other substances named had better be put on broadcast after the first harrowing, and mixed with the soil by the subsequent harrowings, or they may be drilled in with the fertilizer attachment of our ordinary grain drills, and the ground marked out afterward.

In case we have not the full quantity of stable compost required for broadcast application, we will have to adopt another course. Plow and harrow the land as advised; then open up deep furrows, going back and forth in the same place and letting the plow down as far as practicable; next fill these furrows or trenches half full of the compost, and mix this well with soil, filling the trenches at last almost to the top. How to do this mixing and refilling in the most convenient manner is yet an open question with me. Possibly one of the easiest ways is to go along in each furrow with an ordinary horse cultivator. In a small way it can be done with hoe and rake; but in whatever way done, I would aim to have the soil appear as shown in Fig. 14. The place where the plants are to be set should form no more than the merest suggestion of depression in

the general surface, thus insuring safety to plants from the danger of being buried in mud and sediment during heavy rains.

Just as soon as the ground is ready to receive the plants (and of course the plants ready to go out)—say along in May—the work should proceed without unnecessary delay. Take the flats to the field; pull up the plants; arrange them in bundles of convenient size, and trim as advised and illustrated in Chapter II (see Fig. 3, p. 17). To do the work of setting the plants expeditiously, you want men, young or old, that are used to handling plants to set them, and a young boy to distribute the plants ahead of the planters as fast as they need them. Let each planter have

FIG. 14.

CROSS-SECTION OF ROWS.

a dibber, such as shown in Fig. 4 (page 18), and see that he takes pains to firm the soil well around the roots of the plants. The latter should stand five or six inches apart in the rows. On the whole, it is an easy matter for people accustomed to such work to set out the plants in this kind of soil, and a few good men will soon set an acre. Instead of marking out the rows the plants may be set along a garden line stretched tightly directly over the manure-filled furrows.

CULTURE, HANDLING, AND BLEACHING.

What we now desire is rapid, thrifty growth. This is dependent not only on the amount of plant food (with moderate moisture) placed in reach of the roots, but also

on its availability. Frequent stirring of the soil aids the plants to get hold of their food. It gives life to soil and plant, and promotes thrift and luxuriance. The same cultivation and general treatment required for all other garden crops is needed. I think highly of the Planet Jr. horse-hoe. Use the narrow blades. Begin this operation a few days after the plants are planted out. Go back and forth in each space, and quite close to the right-hand row each time, thus stirring the soil close up to the plants. Repeat often; it cannot well be overdone.

In case a good market is available for them, a crop of radishes, or of cabbage or cauliflower plants may be grown

FIG. 15.

CELERY AFTER HANDLING.

between the rows of celery. You can sow two or three rows of these vegetables in each space with the garden seed-drill, and cultivate with hand wheel-hoes. The radishes and cabbage plants, etc., will be off in time to make room for working the celery when that work is needed. Usually, however, it will be found preferable to leave the spaces between the celery rows vacant, thus preventing all interference with thorough and convenient work in cultivating the celery crop.

The manipulation known as "handling" formerly consumed much time and labor. It was usually performed by

packing some soil around the plant with one hand while the other held the stalks closely together. Amateurs and family gardeners often secured the same result by winding cotton yarn once around each plant. Fig. 15 will show you how the plants appear when soil is packed about them

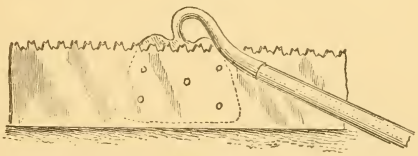
Fig. 16.

Celery After Tying.

by hand, while Fig. 16 shows the plants after they are tied. Both methods are laborious and cumbersome, and must yield to simpler ways when we grow celery for profit.

Two years ago I saw for the first time the tool illustrated in Fig. 17, in use on Mr. John F. White's celery farm near Mount Morris, N. Y. This is simply an ordinary old hoe

Fig. 17.



Celery Hoe.

with blade enlarged by riveting to it a piece of a worn-out crosscut saw, eighteen inches long. Two men, each one provided with one of these hoes, take one row. One goes on one side, the other on the other side. Each one puts his hoe across the row, setting the blade down about midway between it and the next row, and then drawing

the soil toward the plants, under the foliage and against the stalks, and as this is done from both sides, the plants are straightened up and all the stalks of each held closely together by the soil piled up against them. This is done at a rather early stage of the plants' growth, perhaps four or five weeks after they are set in open ground, or some time in June, for this early crop. It teaches plants while yet young to lead an "upright" life.

The manufacturers of the Planet Jr. horse-hoe are now making an attachment to that implement for hilling celery in two styles, the single and double. The single celery hiller, they say, "works but one side at a time, and throws harder and higher than the double, and is adapted to all width rows, from two feet to ten. It also has the leaf lifter and lever expander. It is the more satisfactory for the last and highest hilling, and large growers need both. The single machine is also often used where the rows are so close together that there is not enough earth to complete hilling up both rows at once. The single hiller is then used to hill very high every other row, taking away most of the earth from the alternate rows. Then when the blanched row is marketed it is again used to hill up the remaining row. It is also used to bank up the celery when storing in trenches for winter."

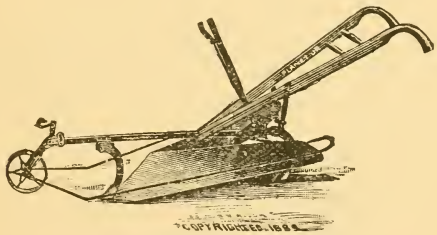
For the double machine, the following points are claimed: "It hills all rows from the first to the last time, when not planted over four and one-half feet apart. In the first hilling the detachable leaf guards are invaluable, enabling the operator to throw up the earth beneath all the leaves, so close as to make *the first "handling" very easy*. Slotted knees at the rear make the vertical adjustment, while the patent lever expander is a simple and delightful method of adjustment to width."

It is shown in Fig. 18. There may be other implements

designed to accomplish the same object and deserving to be tested. At any rate we must try to do this work in a more expeditious and cheaper way than by the old plan of "handling" on hands and knees.

The varieties which we have planted for this early crop are said to be self-blanching. Still they will need some manipulation, when planted in this way, in order to produce a nice, salable article, just the same as if we had planted other kinds, for instance, blanching by boards, as described in Chapter II, and illustrated by Figs. 5, 6, 7, and 8. It is often claimed that celery, when blanched by

FIG. 18.



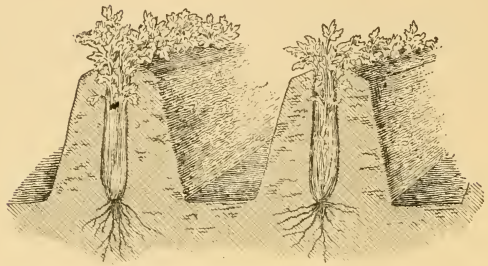
PLANET, JR. CELERY HILLER.

boards, is of inferior quality. I have never found much difference between stalks blanched by boards or by earthing up. Quality, I think, depends on variety, and still more on rapid growth consequent upon high culture. I have no difficulty in producing celery of the very best quality, sweet as nutmeats and brittle as glass, by means of board-blanching.

By far the largest part of all celery grown for market is yet blanched by earthing up. A furrow is first thrown from each side against the "handled" plants with a one-horse plow, the earth then drawn further up to them with

a hoe, and the earthing up finished with spade or shovel. The plants then appear as shown in Fig. 19.

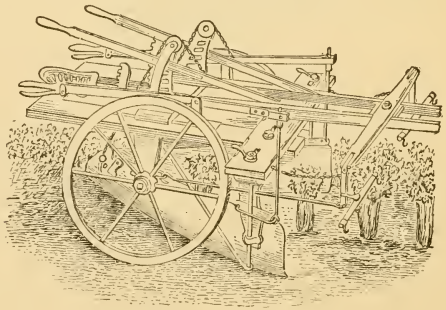
FIG. 19.



CELERY AFTER EARTHING UP.

This old way, however, is again too cumbersome, too laborious, too expensive. We must find cheaper ways of accomplishing the same object, and I believe it can be

FIG. 20.



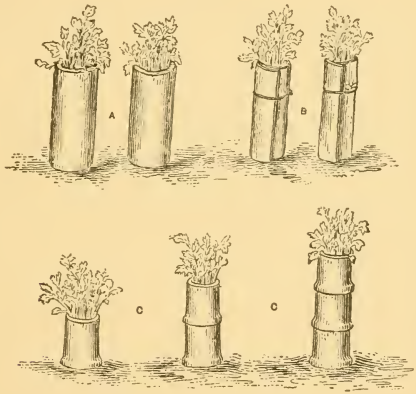
MACHINE FOR HILLING CELERY.

done well enough for all practical purposes by means of a plow, winged shovel-plow, the Planet Jr. celery hiller, or of other tools designed for the same purpose. Fig. 20

represents a machine of this kind recently patented by Maurice M. Ranney, of Michigan. I have not had a chance to try it. Perhaps it will fill the bill; at least I hope so, for the work must be done in some such way if we desire to secure the best financial success in celery growing.

The proper time for putting on the boards, or earthing up the rows, is when the plants have nearly reached suit-

FIG. 21.



METHODS OF BLANCHING.

a, with Tiles; *b*, with Paper; *c*, with Extension Bleachers.

able size for market. Ten or fifteen days of good growing weather will then fit them for use or sale.

There are still other methods of blanching celery. I have tried all I could hear of, but find none of them cheap or satisfactory enough for universal use. This is the case with blanching by means of standing a three-inch tile over each plant, although it does the work quite well. Some years ago I had some "extension" tiles made for the very

purpose of blanching celery. They are shaped like flower-pots without bottom, and fit nicely upon one another. But they are altogether too expensive, and inconvenient to store and handle. I have given up the idea entirely. Then there is the method of blanching by paper. Ordinary brown wrapping paper will do very well. Cut pieces about twelve by eight or nine inches, and wrap one firmly around each plant, tying with string. Plants thus treated will blanch moderately well in the usual time. Fig. 21 illustrates these various methods of blanching; but I give them more for the sake of information, than in the expectation that the celery grower "for profit" will make practical use of them.

By whatever means the early celery is grown and blanched, it should be put on the market without much loss of time. Earliest in market usually means most money in pocket. There is where the profit lies.

IV.

A CROP TO FILL IN.

CELERY FOR THE FALL AND WINTER MARKET.

GROWING THE PLANTS.—PACKING PLANTS FOR SHIPPING.—SETTING THE PLANTS.—UNITED STATES WEATHER SIGNALS.—CULTURE.—HANDLING.—BLANCHING.

The late celery, even if it should be less profitable than the early crop, is yet a very handy one. Whenever a piece of ground becomes vacant in July or August, or even in September further south, and the market gardener knows no other crop to plant for profit, celery is the one he most likely will select. Often the gardener must choose between raising celery or letting the land lie idle for the rest of the season. Late celery, in brief, is a crop that gives an opportunity for raising a second paying crop after early peas, early beets, early potatoes, bunching or pickling onions, early cabbage, strawberries, even early celery, and perhaps other crops, and for putting one's own and one's hired men's labor to good use, when otherwise there might not be enough to do for all hands. The crop, indeed, comes very handy for "filling in."

Growing the Plants.

First get the seed. Select the variety that finds most favor with your customers or in your available markets. Golden Heart (Half Dwarf) is now more generally grown than any other. Giant Pascal, I think, would "take" in any market, and Boston Market is a favorite in some localities. Procure the seed early, and test it to be sure that it will germinate promptly. A pound of seed should give you 250,000 plants. Possibly twice that number might be

raised from it. To make sure of a good stand, however, it is advisable to sow a pound on about 5000 feet of row, or one ounce on 300 feet of row. Thus you may calculate to get at least 150,000 good plants from the one pound, or almost 10,000 from the one ounce of seed. Heroic thinning in the first stages of the plants' growth will be required even then.

To serve as a plant-bed, select the nicest, richest, mellowest, best-protected spot you have, and, if shaded during a small part of the day, all the better, but the exposure should be south or southeast, so that the patch will be ready for operation as early as possible in spring. A sandy muck or mould, or any loam that is abundantly supplied with humus, is just the thing. To fit it best for the purpose, it may be deeply plowed and laid off in narrow beds in autumn. Early in spring apply a good top-dressing of poultry manure and of ashes, or, if you do not have or cannot get these materials, of any other rich and fine manure. I also like to put on some high-grade complete commercial fertilizer, say at the rate of 1500 to 2000 pounds per acre. It takes but a small spot for a thousand plants, and we can well afford to be extremely liberal with plant foods. The soil should be made almost excessively rich to give the best results. We need hardly fear to overdo this.

Next, let the soil be well and deeply worked up; and, after it has been made smooth with the harrow, and firmed with the roller or otherwise, it is ready to receive the seed. You can use the garden seed-drill, but you must try to put the seed down very shallow and cover but lightly; or, you may sow by hand in shallow marks; then draw a fine steel rake along lengthwise over each row, and then again firm the soil with a garden roller. I usually sow by hand, and without covering the seed, firm the soil over the seed by walking heel-to-toe fashion over every row.

Ordinarily I put in the seed for the later or main crop about April 1st to 15th. If the seed was good, and the work properly done, the young plants will be pretty sure to make their appearance in about two weeks after sowing. To make this all the surer, a light sprinkling of fine hay or similar material might be put over the patch after seed is sown, to be again taken off as soon as the young plants have come up. Such covering is quite serviceable in preventing evaporation, and in keeping the surface continuously moist, but I have never found it absolutely necessary. The ground rarely gets so thoroughly dried out at this season as to prevent the prompt germination of good seed planted in freshly-stirred soil, and well firmed afterward.

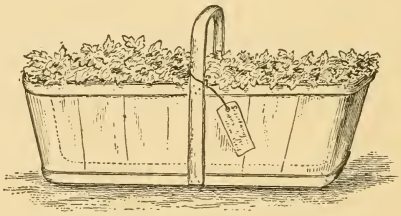
Just as soon as you see the first sign of plant-life in the rows, begin work with the hand wheel-hoe. Any kind or style, either straddling the row, or going between, if otherwise it does good work, will do. Keep the soil well stirred all the time while the plants are in the plant-bed, clear up to the rows, and do not be afraid to gauge into the plants, and thin them quite thoroughly where they are crowded. Follow this up with the hand-weeder, cutting down the row of plants to a narrow line, at the same time pulling out all weeds, and some celery plants, too, if they get too thick. I like to have them stand at least one-quarter inch apart, or from twenty-five to fifty plants to the foot of row

This treatment is sure to give you strong, stocky plants by the time they are wanted for setting out, especially if you can give the rows a good soaking once or twice in dry weather. As an extra help in producing thrifty growth, and preserving moisture in the soil, light applications of nitrate of soda may be given. I find them very effective, and almost indispensable. Sow it broadcast as you would wheat, at the rate of a pound or more to the square rod each time, making the first application soon after the seed

is sown, and another a few weeks later. In the absence of nitrate of soda, pulverized saltpetre, in half the quantity, may answer. Should the plants show a tendency to grow up tall and spindling, do not hesitate to shear, clip, or cut off at least one half of their tops.

Good plants are thus grown quite cheaply, and a good trade in them may be worked up. In fact, this plant trade is a side issue that can often be made more remunerative than growing celery for market. There is money in celery plants, even if you have to sell them at $1.50 per 1000. Packed in cheap baskets, they can easily and safely be shipped long distances. Simply put a layer of sphagnum

FIG. 22.



CELERY PLANTS PACKED FOR SHIPPING.

moss into the bottom of the basket, put in the plants, standing upright and surrounded by the moist moss. This is the simplest way of packing celery plants for shipment. This method you find illustrated in Fig. 22.

SETTING THE PLANTS.

The general principles ruling the process of setting out the plants for the summer crop are also applicable in this case. The soil should be enriched and prepared, as already advised in Chapter III. In my latitude I like to do this work just as soon as the first crop is cleared off and the

land becomes available, even should this be as early as last week in June; but any time in July will do for the winter crop. August and September are the months for this work, as we proceed further south.

The details of the process of setting out the plants are the same as described for the summer crop. With frequent rains at this time the operation is just as easy and safe. Ordinarily, however, we have just then much sunshine and dry soil. If the soil is a moist muck or loam, our success will be reasonably certain if we take pains to plant shortly after the ground has been worked, and, consequently, is still moist clear to the surface. With chances of irrigation well utilized, we have nothing to fear any way. Without them, however, we may find it a difficult task to set celery plants, no matter how good and well-rooted they may be, into hot and dust-dry ground. I would then advise to water the rows a few hours or a half day before planting time, even if it has to be done with ordinary garden sprinklers. Let the water soak well into the ground right in line where the plants are to stand. Be sure that the plants, when out of the ground, are not exposed to air and sun any more than is absolutely unavoidable. Let each bundle of plants, as soon as properly prepared and trimmed, be dipped in water, or the roots in a puddle of thin mud, and then planted as speedily as possible. If hot and dry weather continues, shade the plants set out by scattering a little fine hay over them.

I do not usually advise postponing the job of setting out plants in a dry time waiting for rain. It is much better to make an extra effort to get water. On the other hand, I like it well enough to have a cloudy day for the work, and rain soon following after. People who have access to a daily paper, or a chance to watch the flag and whistle signals employed by the United States Weather Bureau, have

this great advantage, that they can get reasonably reliable information about next day's weather. When I have a lot of plants to set out, I watch the weather forecasts in my daily paper quite closely. Should cloudy weather or rain be announced for the next day, I make the best use of my time, and of all the forces available, and let the plants go into the ground as rapidly as possible, even if we have to keep at it until after nightfall.

The flag signals relating to this phase of the weather are given by the display of one of three square flags. One of them is white, and indicates clear or fair weather; one is blue, and indicates rain or snow; one white and blue, and indicates local rains. Their general appearance is illus-

FIG. 23.

UNITED STATES WEATHER FLAGS.

trated in Fig. 23. A black triangular flag refers to the temperature, indicating warmer weather when placed above one of the flags already described, and colder weather when placed below it. A white flag with black square in centre announces the approach of a sudden cold wave.

Of the whistle signals there is at first a long blast of from fifteen to twenty seconds' duration. This is intended simply to attract the attention of the observer. Following this, one long blast (four to six seconds) indicates fair weather, two long blasts indicate rain or snow, and three long blasts local rains. The short blasts refer to the temperature, namely, one blast meaning a higher temperature,

two blasts a lower temperature, and three blasts the approach of a cold wave.

Culture, Handling, and Bleaching.

Little is here to be said about these operations, since they are the same as described for the summer crop. You may look the directions up in Chapter III, if you wish. There is one exception, however. The winter celery need not and should not be much blanched before it is put into storage. Any part of the late crop that has been properly earthed up, and is in fit condition for market, should be disposed of as soon as convenient. Blanching is the first step toward decay. Celery that by "handling" or slight hilling has been made to grow upright and compact, will have plenty of chance to bleach during winter, and soon be all right for putting on the market.

In explanation of a general principle I have to add that what we call blanching or bleaching is not real bleaching—not a change of green to white—but only the production of new growth, which remains white in the absence of light. This also explains why early celery can be "bleached" in ten days or two weeks, while the perfect bleaching of late celery may require four or six weeks. In one case the growth is rapid, in the other comparatively slow.

V.

THE NEW CELERY CULTURE.

A NEW WAY PROMISING LARGE PROFITS.

INDISPENSABLE REQUISITES.—THE NEW METHOD IN THE HOME GARDEN.—IN THE MARKET GARDEN.—A CELERY SHED.

The idea of growing celery so closely together that it will blanch under its own shade is not exactly a new one. I have repeatedly come across it in the agricultural press in years past. Prior to the introduction of the White Plume celery, little attention was paid to the plan, for the just reason that there was no variety in existence well suited for it. Then came the White Plume, and later the Golden Self-blanching, and they have made "the new celery culture" a possibility, and to some extent a success.

I have given this new plan a pretty good test, at least for one season, and think it has its uses, and under the right conditions can be made exceedingly profitable.

The two conditions, without which success cannot be expected, or at least made a dead certainty, are (1) plenty of plant foods, and (2) plenty of water. If we wish to grow on one acre the same amount of stuff that we have been in the habit of growing on four or five, it stands to reason that we must also put upon the one acre the same quantities of manure that we used to put on the four or five. In short, there is no use trying to raise celery on the new intensely intensive plan on any soil save that which is or can be made excessively rich. Put all the rich, well-rotted compost on the land that you can plow under or fork in. If you make use of commercial fertilizers, use them at the rate of several tons per acre. Heavy dressings of wood-

ashes, dried blood, fish compost, etc., will come acceptable. The wonderful amount of celery that this method enables us to raise on a piece of land justifies the most lavish use of fertilizing materials.

We can also afford to incur quite a considerable expense for the sake of making a water supply—a stream, a pond, a canal, wells, cisterns, or whatever it may be—available for irrigating our celery grounds. Water we *must* have. The enormous growth of closely-planted celery which covers the ground with a dense mass of foliage one to two and more feet high, pumps up, consumes, and evaporates an astonishingly vast amount of moisture. The summer rains are seldom copious enough to supply one-half of the water needed, and unless water is given by artificial means, the soil will appear dry even shortly after a moderate rain.

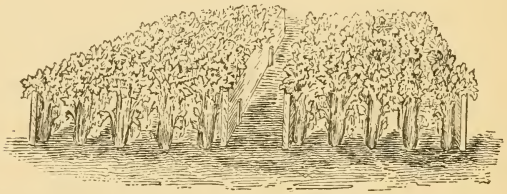
The home gardener may well depend on buckets and garden sprinklers for the purpose of transporting the water needed for his few hundred plants, and brought from cistern, well, washtub, creek, or pond. But whoever has to furnish the liquid element for even a single thousand plants in this manner will most likely get tired of carrying buckets before the season is half gone.

The New Culture in the Home Garden.

I cannot be too emphatic in my advice to the home grower. By all means set out two hundred or three hundred White Plume plants in your richest and best-manured and best-prepared ground. Set them in short rows, ten inches apart, and the plants five inches apart in the rows. If you have more than eight rows, it may be well to leave the central row vacant in order to give you a better chance to reach all the parts of the patch with the watering-buckets and cans. Fig. 24 gives a glimpse at the home garden patch. There are ten rows, each twelve feet long, containing

in the aggregate about two hundred and seventy-five plants. To make the patch real snug, and to bleach the outside rows all the better, each bed is enclosed by boards eight to twelve inches wide and as long as necessary, set up on edge as shown, and held in position by pegs or little stakes. This is a pretty easy and simple way of raising all the celery you may want from middle of July to March or April. Along in May, or early in June, plant a patch of White Plume, with perhaps some Golden Self-blanching for variation and for trial. Keep the ground between the plants well stirred for a few weeks. Usually there is no need of applying water at this early stage. Soon the plants will

FIG. 24.



THE NEW CELERY CULTURE IN THE HOME GARDEN.

cover the ground and choke out most of the weed-growth. I have made a sure thing still surer by putting a mulch of fine old compost several inches deep between the rows of plants within a week or two after they were set out.

When the plants begin to cover the ground, the time for water applications has come. Continued or very heavy rains may for a while relieve you of the task; but do not let light rains or short showers interfere. Give the ground a thorough soaking once every five to ten days, according to the weather. Washing-suds and similar liquids are of especial benefit. Make all such applications directly to the ground between the rows, flooding rather than sprink-

ling. Overhead watering will not be necessary. You will do no harm even if you should use from twelve to fifteen buckets of water for the patch shown in Fig. 24 at a time. By the first of August or sooner the crop should begin to be available for the table, and the two hundred and seventy-five plants will give a full supply to a good-sized family until late fall.

To provide for a supply from that time on until pretty well toward spring, set another similar patch in early July or thereabouts, on similarly-prepared ground, and at similar distances, selecting Giant Pascal, New Rose, or other good non-bleaching sorts. A few plants may again be of the White Plume or Golden Self-blanching varieties, in order to give you an immediately available supply to last

FIG. 25.

NEWLY-SET PLANTS SHADED BY MULCH OF FINE HAY.

until the main part has become more thoroughly blanched in winter storage.

In setting out the plants during the usual dry weather of this period, use the precautions mentioned in the previous chapter. As but part of a square rod is required for such a patch, however, it is not a great thing to apply water enough, previous to setting the plants, to thoroughly moisten the soil and make the operation of planting a success, especially if a little fine hay is sprinkled over the plants afterward, as shown in Fig. 25. With plants crowded together as closely as required by the "new celery culture," a little hay goes a great way.

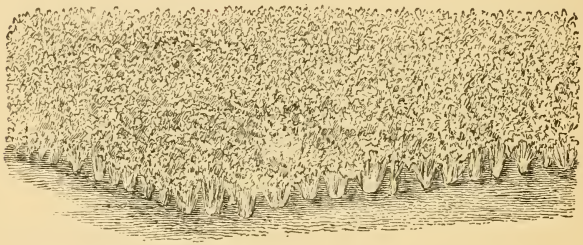
The late crop makes the bulk of its growth during a

period of usually more abundant rainfall; artificial watering, therefore, is less imperative and less indispensable, ordinarily, than for the summer crop. Still there will be times when water may be needed, and in most cases an occasional soaking given to the ground will prove quite beneficial.

The New Culture in the Market Garden.

The experiments heretofore made in this line are neither many nor extensive, and there are a number of points concerning this branch of the business yet needing further

Fig. 26.



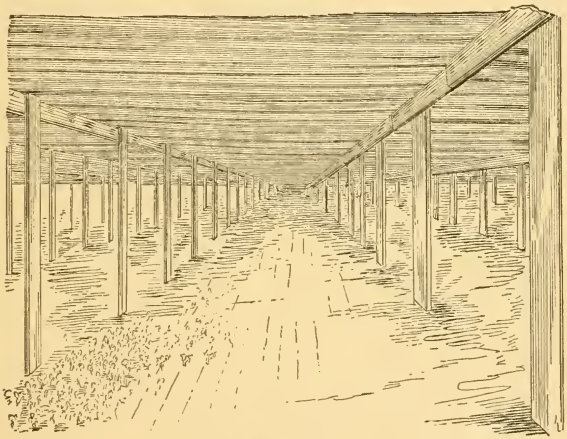
Glimpse at Celery Patch Grown on the New Plan.

investigation and tests. One of these points is the proper distance between the plants. Some writers recommend to set them seven by seven inches apart. I have tried various distances. In my early patch, last season, the plants stood six inches apart, with rows a foot apart; in my late patch they were planted seven by seven inches apart. Hereafter I shall adopt a middle course, make the rows ten inches apart, and set one plant to each five inches of row. This puts the plants as close as White Plume should stand, in order to bleach well without further manipulation, and yet gives us a better chance to mark out the ground, set the

plants, and run the hand wheel-hoe through the patch, than when we plant seven inches apart each way. In short, five by ten is much more convenient, and, I think, just as effective. For marking out the ground you can use any ordinary garden marker with teeth ten inches apart, going over the ground both ways. Then, following the rows, set a plant in each cross-mark, and one between.

Fig. 26 gives us a glimpse at a celery field of this kind,

FIG. 27.



CELERY SHED.

with plants just making good growth. I can assure you that it is a sight worth seeing. You will get some idea, too, of the amount of stuff growing on a piece of ground, when you come to figure out the number of plants required to set an acre—more than 120,000.

Celery likes a reasonable amount of light. It will not thrive in shade, and especially not in the shade of trees, as their roots will consume a part of the plant-food which the

celery needs for strong growth. On the other hand, I find that some little shade in hot weather is quite beneficial and promotes rapid growth. In view of the wonderful possibilities of a piece of land properly treated when planted to celery on the new plan, I am quite confident that it could be made an exceedingly profitable investment to fit an otherwise judiciously selected piece of ground, in the manner shown in Fig. 27. The idea is simply to provide slight shading. For this purpose posts in lines are set, to stand eight or nine feet above the surface of the ground, and connected with scantlings, across which, in turn, are placed slats or poles. The ground underneath can be worked and planted in the manner described for the new culture, and the plants will be safe from excessive sun-heat, and consequently from some of the diseases that often attack the exposed plants in the hot season.

VI.

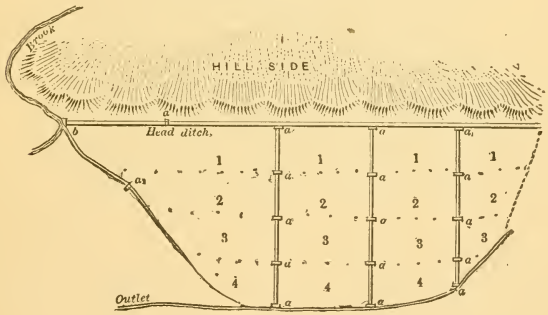
THE IRRIGATION PROBLEM.

MAKING SUCCESS A CERTAINTY.

AN IRRIGATED FIELD.—IRRIGATION BY BOX DITCH.—TILE LINES AS WATER DISTRIBUTORS.—WATERING BY HOSE.

Nowhere have I seen a better solution of the irrigation problem than on the celery fields near Mount Morris, New York, already mentioned in this work. Fig. 28 represents a plan of this tract of muck land. The main ditch, which is cut near the foot of the hill on almost a dead level, can

FIG. 28.



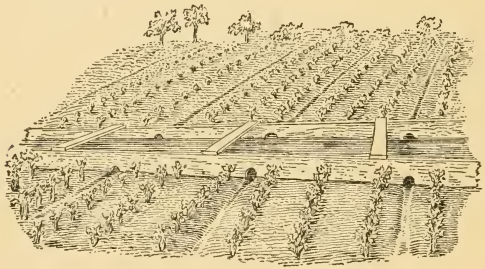
PLAN OF IRRIGATED FIELD.

be filled from the little mountain stream rushing by at the upper corner. Cross ditches connect this main ditch with a parallel ditch, which is dug at the foot of this tract and serves as an outlet. When the patch needs watering, the brook is turned into the main ditch, and the latter allowed to fill up. The water seems to percolate quite easily

through this sandy muck, and in a day's time the whole strip next to the head ditch, 1 1 1 1, will be pretty well soaked through. Then by opening flood-gates the water is allowed to fill the first section of each cross ditch, and these in their turn will soak up the next lower strip, 2 2 2 2. Thus continuing, the whole tract is thoroughly soaked up in the course of a few days. Here celery and other garden crops grow luxuriantly.

Undoubtedly there are many other places where similar opportunities for sub-earth soaking exist, and wherever found they should be practically utilized, as they double and treble the crops and the value of the land.

FIG. 29.



IRRIGATION BY BOX DITCH.

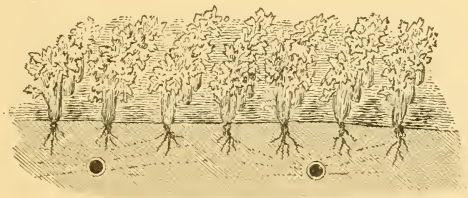
Ordinary loams and ordinary sub-soils, however, do not let the water pass through thus easily and freely. To distribute the water from a higher source of supply—a ditch, a canal, a pond, a brook, or stream—we must usually resort to surface irrigation. If we conduct the water to the highest part of a field with slight slope, we can then turn it into shallow furrows made with a hoe or hand plow between the rows, six or eight feet apart, and let it flow along in one after another, until the corresponding strip has been given a thorough watering or soaking.

A box ditch, as shown in Fig. 29, may be utilized as a conductor of the main supply to the highest part of the field, or sometimes a simple furrow or ordinary shallow ditch may answer the same purpose.

A superior way of distributing the water from the main supply to all parts of the field is by means of tile lines laid eight to ten inches deep, and as closely together as needed to make the water reach to the middle between these lines, say eight or ten feet apart. Fig. 30 shows the arrangement of this style of sub-irrigation in the "new celery culture." Each line should be on a dead level.

If the soil is tenacious, offering some resistance to the

FIG. 30.



TILE LINES AS WATER DISTRIBUTORS.

free capillary passage of water, or liable to become pasty, or if it be desired to arrange the tiles only for the use of one crop and at least expense, I would lay the lines more closely together on the surface, and only barely covered, and leave the row just over them vacant. This arrangement is made plain in Fig. 31.

Cheap home-made hose may also be utilized for distributing the water over the area to be irrigated. If this area is a patch planted on "the new culture," however, it may be well to understand at the beginning that there is little chance to walk through, or work in, an unbroken

planting. At suitable distances apart one or more rows should be left vacant to serve as a path for the person carrying the hose.

A short time ago, Mr. H. A. March, of Washington, gave me the following details of his irrigating plant: —

"We have a never-failing spring of water situated about twenty feet higher than any of our tillable land. This water is brought down in open troughs to the tanks on the upper side of the field to be irrigated, holding 20,000 gallons each. We turn the water into the tanks in the heat of the day, and the sun warms it up to about 60° Fahrenheit.

FIG. 31.

TILE LINES NEAR THE SURFACE AS WATER DISTRIBUTORS.

"To distribute the water, we use a hose made from twelve-ounce duck. We take a piece thirty feet long, and cut it lengthwise into three pieces, which makes ninety feet of hose about two and a-half inches in diameter. We fetch the edges together, double once over, and with a sewing-machine sew through the four thicknesses twice, which makes a hose that will stand a six or eight-foot pressure. To make it waterproof, we use five gallons of boiled linseed-oil with half a gallon of pine tar, melted together. Place the hose in a wash-tub, turn on the oil hot (say 160°), and saturate the cloth well with the mixture. Now, with a clothes-wringer run the hose through

with the wringer screwed down rather tight, and it is ready to be hung up to dry. A little pains must be taken to blow through it to keep it from sticking together as it dries. I use an elder-sprout about a foot long with the pith punched out. Tie a string around one end of the hose and gather the other end around the tube and fill it with wind, then hang it on a line and it will dry in a few days and be ready for use. It will last five or six years.

"To join the ends, we use a tin tube two and a-half inches in diameter by one foot long. It is kept tied to one end of the hose all the time. To connect them, draw the open end of the hose over the tube of the next joint and tie it securely. When ready to irrigate, we take the hose in sections convenient to carry, lay it from our tanks to the third row from the outside and down this row to the end of the field. Then the water is turned on.

"To connect the hose with the tank, we take a hard-wood stick fifteen inches long, bore a two-inch hole through it, and with a hot iron burn it out smooth on the inside, work one end down until it will fit into the end of the hose next the tank and tie it securely; then work the other end down so that it will fit tightly into a two-and-a-half-inch hole. With a two-and-a-half-inch auger bore a hole in the tank on the side next the field you wish to water, two inches up from the bottom—then no sediment or dirt will wash into your hose. Push the plug into the hole, with a mallet give it a few gentle taps, and the work is done. We now have our water running, and it can be carried to any part of the field for any crop that needs it.

"To prepare for setting out celery plants in a rather dry time, we take the end of the hose in hand, and fill the row the hose is in and the two on each side of it about half full of water, working backward to the end of our first joint (thirty feet); then we cast the first joint off and go on in

the same way until the five rows are watered. We have a two-and-a-half-inch plug ready to fit the hole in the tank, pull out our connection-tube and drive in the plug until the hose is again laid where wanted. A man in this way will water three or four acres in a day. With a Planet Jr. cultivator and one horse we level the ridges into the furrows, then with a light drag make the whole surface smooth and level. In a few hours the water soaks up through the dry earth and leaves a nice moist soil, that will not bake, to set our plants in, with plenty of moisture and good manure at the roots, where it is most needed. Not one in a thousand plants will die, and hardly even wilt, in the hottest sun.

"As the plants get larger we use the Planet Jr. to throw a little soil to them, and that is all the handling we give. When they have grown to six or seven inches, they consume water very fast. Our man now stretches the hose down the fifth row, instead of the third, and waters nine rows at a time, for now he waters the whole ground instead of the furrows. By compressing the end of the hose he is able to throw the water eight or ten feet each way. The ground is thoroughly soaked with warm water. In about three days we start the cultivator.

"The ground being underdrained thirty feet apart, all surplus water is immediately taken off, and this allows us to irrigate at least once a week, and to use the cultivator within a few days after, to keep the soil from baking. Under such treatment one can almost see the plants grow."

Thus far my friend March. Let me add that this problem of irrigation is of the greatest importance to every commercial celery grower. If practically solved, there is nothing else of note in the way of highest success in celery culture, either old or new.

VII.

THE ENEMIES OF THE CROP.

INSECTS AND DISEASES, AND HOW TO FIGHT THEM.

THE PARSLEY WORM. — THE CABBAGE PLUSIA. — SLUGS. — CELERY BLIGHTS. — CELERY RUST. — BACTERIA.

Unlike the majority of the choicer garden vegetables, celery has no insect enemies that might justly be called destructive or formidable. The few that attack the plant are easily kept in check by simple means.

Insect Enemies.

The most conspicuous and common among the two leaf-eaters, which are found on celery, is the "celery caterpillar," which, although quite handsome in its black and yellow-striped suit, makes itself decidedly disagreeable by the nauseating odor emitted from two yellow horns situated on the body just behind the head. The adult, a beautiful butterfly (*Papilio asterias*), may be seen flitting to and fro about the celery plants, alighting here and there for the purpose of depositing its eggs. I always try to kill the beautiful mischief-maker whenever I have a chance. In Fig. 32, at *b*, it is shown in one of its favorite attitudes. The larva is seen at *a*. Usually we find only scattering specimens, and they may be picked off by hand, or killed by a puff of bubach (insect powder) from the bellows.

The second leaf-eater is the cabbage plusia (*Plusia brassicæ*). At *c*, in same figure (32), you see the larva in the looping position, which it assumes when moving. It is about an inch long, of a pale-green color, with longitudinal lighter stripes. The head is small, and the body

gradually enlarges from the front backward. They are more frequently found on cabbages, lettuce, and a lot of other plants, than on celery; but usually there are a number of them together, making them more destructive when they do appear in the celery patch. Dusting with fresh insect powder, or spraying with kerosene emulsion, will kill them. The moth, shown at *d*, usually flies only by night, but occasionally may be found about in cloudy weather.

FIG. 32.

CELERY LEAF-EATERS. (*Half Natural Size.*)
a, Celery Caterpillar; *b*, Asterias Butterfly; *c*, Cabbage Plusia Larva; *d*, Moth.

More damage than is done by these leaf-eaters is often done by stalk-gnawing insects, especially by slugs. Against the latter, however, we have simple and effective remedies. The snails work at night. After dusk scatter powdered, fresh air-slaked lime over the plants and upon the ground, or during the later stages of growth, when slugs are most to be

feared, spray thoroughly with strong lime-water, taking pains to reach well under the foliage and on the lower parts of the stalks. Salt water will also kill these slugs.

Fungous Diseases.

The disease which is most common in our celery patches, and gives us a great deal of trouble, is the celery blight, often wrongly called rust. It is due to the rapid growth of a fungus, known to mycologists as *Cercospora Apii* (Fr.), on the leaves. A leaflet, attacked by the blight is shown in Fig. 33, *a*. The disease is liable to attack the plants in all stages of growth, and at almost all seasons, but ordinarily makes its first appearance when the plants have reached considerable size, and then spreads rapidly in all kinds of weather, and in spite of all treatment. This, at least, is my experience. White Plume and Golden Self-bleaching are especially subject to this and other diseases. I have tried to keep the blight in check by thorough weekly applications of various fungicides, including ammoniacal solution of copper carbonate, solutions of sulphide of potassium, of corrosive sublimate, etc.; but my success has by no means been encouraging. Usually, however, we can get the summer crop out of the way before the disease has made much headway, and done much damage.

Above all things we should try to keep the blight from attacking the plant-beds. Never set a plant in open ground that shows the least infection. Raise plants, if possible, in a new location every year, and never use the same patch that has once been invaded by the enemy. Shading the plant-beds with lattice-work laid over a frame, will probably keep the plants in health. Celery grown in a celery shed (see Fig. 27) will also be likely to remain free from the disease.

Another leaf blight (*Septoria Petroselini*, Des., var. *Apii*,

B. & C.) is also probably quite common, and may be easily confounded with the other. The appearance of a blighted leaflet is shown at *b*, same figure. It differs from other celery blights, to the ordinary observer, in the more complete killing of the leaf affected.

FIG. 33.

FUNGOUS DISEASES OF CELERY.

a, Leaf Blight (*Cercospora Apii*, Fr.); *b*, Leaf Blight (*Septoria Petroselini*, Des., var. *Apii*, B. & C.); *c*, Leaf Spot (*Phyllosticta Apii*, Hals.); *d*, Rust (*Puccinia bullata*, Wint.); *e*, Bacteria on Leaf; *f*, Core of Plant affected with Bacteria.

The celery leaf spot (*Phyllosticta Apii*, Hals.) begins as a dull-brown patch, never becoming of the light ashy color characteristic of the *cercospora* in one of its stages. A

leaflet attacked by spots is seen at *c*. The leaf may be attacked only in one spot, which, continuing to enlarge, causes the whole to become brown and lifeless, followed by a torn condition. Two or three of these large, dead places may be all that the leaf contains, while the balance is healthy and deep green.

The celery rust (*Puccinia bullata* and *P. castagnei*) has not yet been found in this country, although it appears to have a wide range geographically. A leaflet affected with *P. bullata* appears at *d*.

More rapidly destructive, where it appears, than any of the preceding, is a bacterial disease which has not yet been fully investigated and classified. The germs, when introduced into the core of a plant, cause this tender portion to decay with greater rapidity than when placed in leaf tissue. The appearance of a leaf affected with bacteria is shown at *e*. All the dark portion abounds in germs. The central portion of a celery plant, with its heart infested and one of the outermost leaf stalks decayed and fallen, is shown at *f*.

For much of this information about fungous diseases, as well as for the illustrations, I am indebted to a special bulletin on "Some Fungous Diseases of the Celery," by Prof. Byron D. Halsted, issued by the New Jersey Experiment Station. I am sorry so little can be said concerning the remedial or preventive treatment of these fungous pests. My remarks about the treatment of *Cercospora Apii* apply to all the rest of these diseases. Most of the experimenters *claim*, however, that spraying with the ammoniacal solution of copper carbonate has resulted in checking some of these troubles, and in saving at least a partial crop. The tests should be continued.

VIII.

THE WINTERING PROBLEM.

HOW TO KEEP AND BLANCH THE CROP FOR WINTER USE.

REQUISITES OF SUCCESS.—STORING IN CELLAR.—STORAGE IN BOX.—STORAGE IN HOTBED FRAME.—STORAGE IN TRENCHES.—STORAGE IN ROOT-HOUSES OR PITS.

The principal requisites for success in keeping and blanching celery in winter storage are few and simple, namely:—

(1) A storage place, dark, cool, frost-free, moist at the bottom, dry from overhead. A trench, a cave, a cellar may supply all these conditions, or if not, can usually be made to do so. Properly-constructed root or celery storage houses always must supply them.

(2) Celery free from disease, taken up, usually with some soil still adhering to the roots, before the temperature has at any time fallen below about 25° Fahrenheit, which in my locality means by the first or middle of November.

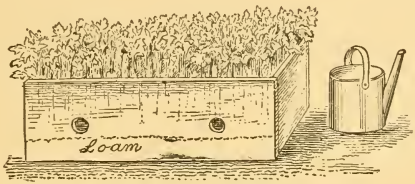
(3) Plants stood upright moderately close together, but not overcrowded enough to exclude all circulation of air around the foliage, with roots resting upon or in moist soil in one or the other of the storage places named. That is about all.

Storing for Family Use.

One method has already been mentioned. Simply take up the plants at the time specified by prying under each plant with a spade, simultaneously taking hold of the tops with one hand and pulling. Then set them as closely together as the bunches of roots will permit, upon and

partially in a layer of moist muck or loam in a corner of the cellar. Keep this layer always moist, or wet, and the foliage always dry. Use the plants that were most nearly blanched first, saving those which had the least done to them in the field for the last.

FIG. 34.



STORING CELERY IN BOX.

Instead of putting them directly upon the cellar bottom, you may place them into a box of convenient size having a layer of muck or loam in the bottom. Just above this layer bore a few holes into the sides of the box, and through these you may apply water as needed. A box thus arranged

FIG. 35.

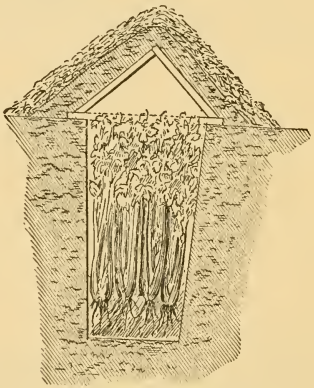
STORED IN HOTBED FRAME.

is shown in Fig. 34. Place the box in a corner of the cellar bottom.

Another good way for the home grower is shown in Fig. 35. Throw the old soil and manure out of the hotbed, put in a little loam, and stand the celery upon and in this,

as advised for storage, in the box. First cover with the shutters; but when winter comes in real earnest, put fine hay or leaves upon the celery, filling the frame clear up to the top; then replace the sashes and, finally, the shutters, and straw, hay, or other coarse materials, as a further protection in cold weather. The sides of the frame should be well banked up. A crop may also be grown in the hot-beds vacant at that season, by setting plants in them seven inches apart each way in July, watering freely; then, as the

FIG. 36.



STORAGE IN TRENCH.

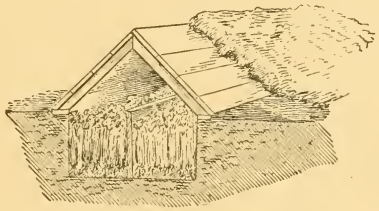
plants grow, putting another frame of similar dimensions upon the first one, thus enclosing the plants to their full height, and then covering up and protecting as already described.

In an emergency, a few plants, nicely cleaned and trimmed, may be kept for some time by packing in alternate layers with moist sphagnum moss. Of course, they should stand top side up.

Storing for Market Purposes.

For storage on a large scale, the narrow trench system (see Fig. 36) offers the advantage of simplicity and cheapness, so far as equipments are concerned. In some well-drained spot dig a ditch, or ditches, not over a foot wide and just deep enough to sink the tops of the stored plants to the surface level. In taking up the plants, some soil may be left on the roots, but many growers, to save space, knock the soil all off before storing the plants. Pack them into the trench as closely as can well be done; then either lay single, wide boards upon the ditch, or better, make

Fig. 37.



Trench for Storing Celery.

troughs, from two boards each, and place them on as a cover. Stop up the ends with straw or leaves for ventilation. At the approach of cold weather put on some soil, and later some coarse manure, or the like.

A wider trench is shown in Fig. 37. This plan has been practiced in various localities for many years. M. Garrahan, of Pennsylvania, gave me the following description of it:—

"We throw out a trench four feet in width, putting half the dirt on each side to facilitate covering. The trenches are just far enough apart to drive between and unload from each side. A board is run through the centre of the trench

to prevent the celery from crowding together too closely. The upper edge is about on a level with the top of the celery. If not packed too tight, it will keep longer without rotting. The trench is dug two feet deep, more or less. Rafters are cut from two by four scantlings (hemlock or chestnut), at an angle that will bring the peak or ridge four feet from the bottom of trench. Generally, three boards, a foot wide, will cover each side. Ventilators are made from common fence boards, inserted at reasonable distances, and in severe weather stuffed with litter to exclude frost.

"For about two weeks after storing, celery will 'sweat' and throw off a great deal of moisture. We, therefore, slip the roof on as soon as we can after filling the trench, to keep off rain, and leave the soil covering off as long as we dare. At the approach of real cold weather, we simply put about a foot of earth all over the roof. With rafters four feet apart, we have no trouble about the roof settling under its weight.

"The advantages of this plan are that one can store celery as fast as could be done in narrow trenches, and much faster than carrying the plants down cellar. It can be taken out at any time, and in any kind of weather. We also insure immunity from rats, as we take up the covering and plow the ground level in spring. Then we have a lot of lumber in the fall that has been used for banking up, so that it does not seem to cost much money."

The "celery houses," or "celery pits," in use by celery growers in various sections, are constructed pretty much on the same general principle as the wide trench plan illustrated in Fig. 37. They vary in width between six and twenty-four feet, and in length to suit the quantity to be stored. These wider ones have a ridge-pole resting on posts, and for the roof rails, slabs, or old boards may be laid

across, from ground to ridge pole, and covered first with coarse litter and then with earth. Make the covering thick enough to keep out frost. At one end there should be a door, and a window and ventilator at the other.

Such structures, of course, require some attention during the winter. Air must be admitted from time to time, in suitable weather, to prevent rotting, and yet frost has to be excluded.

IX.

MARKETING METHODS.

HOW TO TURN THE CROP INTO CASH.

GENERAL ADVICE.—PREPARING CELERY FOR MARKET.—PACKAGES.—CRATE FOR SHIPPING SUMMER CELERY.

It may be well to repeat some of the advice so frequently and properly given. Always cultivate your home market in preference to a distant market. Really good celery, such as any gardener can grow if he follows the directions given in this book closely, is so palatable and appetizing that you will have no trouble in getting your neighbors and townspeople to like it, and soon to find it indispensable. Try to tempt their appetites and to work up a trade. The taste for celery is growing, and when the article is really good, I find it always tempts the buyer. Even small towns, when well worked, can and will consume large amounts of this vegetable.

When you have more than can be disposed of near home, work your nearest larger market. Don't ship everything to New York city, to Boston, and Philadelphia. The larger inland towns often give you good opportunities. The nearest larger city usually is your best market, unless a trial shipment to a more distant market proves that to yield better returns.

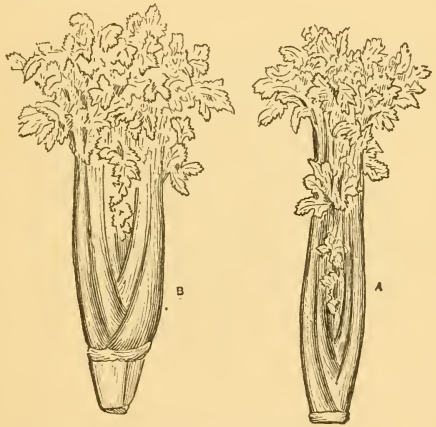
Preparing for Market.

All efforts should be made to get the article into the market as fresh and crisp and as attractive in appearance as possible. This may consume time, and require expense, but it should not be neglected on that account, and it will be found to be a well-paying investment. So far as the

manner of trimming and arranging the stalks, and the style of packages are concerned, you must be guided by the whims and fashions of your particular market.

The Kalamazoo shippers have made the bunch of one dozen plants common and popular in all markets; but I think they make a slight mistake in trimming off the root with one square cut, as shown at A in Fig. 38. It seems to me much more preferable to trim with four slanting cuts, as

FIG. 38.



WAYS OF TRIMMING THE ROOTS.

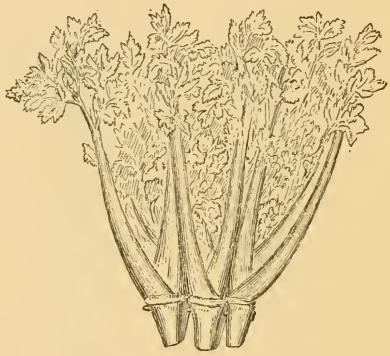
shown at B. The plants are taken from the field or pit, freed from nearly all the unbleached leaves as well as from the root part, then placed, a dozen at a time, into a square frame and tied firmly. We then have bundles of a dozen plants each, and these are tightly packed in flat boxes and sent to market.

During August and September 1892 I have shipped the results of the "New Culture" to Buffalo, and notwith-

standing the glut and low prices prevailing in the markets during that season, and notwithstanding the fact that the stalks were not bleached as perfectly as closer planting (or boarding up) would have done, the cash returns were enough to pay me moderately well.

On mucky or otherwise very loose soils the plants, when not earthed up, may be pulled up easily and expeditiously by hand. On more tenacious soil, or if plants were earthed up, you will have to make use of spade or shovel.

FIG. 39.



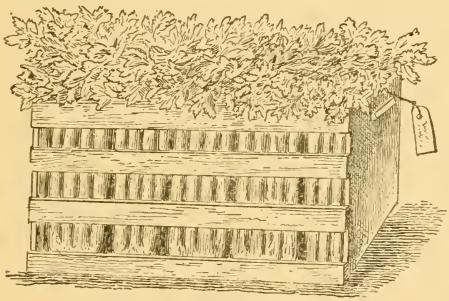
BUNCH OF CELERY.

Two large tanks or tubs filled with water should be handy by for washing and rinsing the plants. As fast as the plants are taken up, from pit or field, remove the superfluous leaves, cut away the roots; then give the plants a thorough washing, getting them thoroughly clean by scrubbing with a brush or broom, and then rinsing in the second tank or tub. Then tie them in bunches as the market requires, and ship them in the customary package.

Another method of preparing celery for market, in use by Eastern growers, is the one illustrated in Fig. 39. The

plants are cleansed and trimmed, so that the heart of each is well exposed, giving the plant a somewhat flattish shape. Then from two to four, and even up to five roots, according to size, are fastened together as shown in illustration, either by means of a long nail driven through the base of the plants, or by tying with twine, and always in such a manner that the hearts are all exposed to view on one side. The Boston market demands that the crop shall be exposed for sale in oblong boxes which equal a barrel in capacity,

FIG. 40.



OPEN CRATE FOR SHIPPING CELERY.

and that the bunches of celery be of such a size that three dozen of them will fill the box even full.

New Jersey growers often pack the bunches tightly in large barrels, making bunches of which from three to four dozen will fill the barrel.

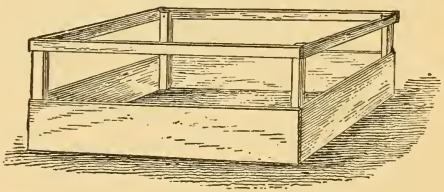
For most local markets the grower may use any kind of package—box, crate, or barrel—which he finds most available or most convenient. I have shipped part of my crop in bunches of a dozen roots each to the near Buffalo markets, packed in open crates as shown in Fig. 40. This plan works all right provided you can ship the freshly-gathered

and prepared plants in the evening, as I do, and have them in market by four or five o'clock the next morning, and usually sold the same forenoon. Celery, if left lying about open in commission and retail stores, soon deteriorates, and at last becomes worthless. I always instruct my commission merchant to sell without much delay, at a small price if he cannot get a big one, but to sell any way.

Crate for Shipping Summer Celery.

Not everybody is so situated that he can get his crop into the retailer's or consumer's hand thus promptly. The risks in consequence of wilting are especially serious with

Fig. 41.



Crate for Summer Celery.

the summer crop. Mr. Robert Niven has used the crate illustrated in Fig. 41 with satisfactory results.

It is made of three-quarter-inch stuff, one side being twenty inches long, the other fourteen and a half inches long. The lower slats have a width of four inches, the upper ones a width of one and a half inches. The posts are twelve inches long and one inch square, and nailed inside the corners. The joints are mitred and painted before nailing together, and the bottom is made water-tight all around.

The plants to be shipped in these crates are left with roots on. They are properly washed and rinsed, then

bunched, and packed upright into the crates, enough water being poured into the latter to cover the roots. Thus put up, the celery will keep for a week or longer in good condition, and the commission merchants may thus ship them safely to hotels and stores throughout the country.

PROFIT AND LOSS ACCOUNT.

THE OUTCOME IN DOLLARS AND CENTS.

ESTIMATES OF PROFIT.—LOSS NOT IMPOSSIBLE.—PROFITS OF THE SUMMER CROP.—PROFITS OF THE WINTER CROP.—FINAL WORD OF WARNING.

Before engaging in a new enterprise, the prudent business man always tries to figure out the exact amount of profits that he thinks he may expect as the final outcome of his venture. This is no more than it should be. In the course of similar arithmetical efforts, the celery grower obtains a mental view of the possibilities of the crop, and an aim for his labors.

This is not all. The soil-tiller is very likely to look over his crops from time to time, and watch their progress, and figure out in his mind how much they may yield him in clean cash. Few people, however, are in the situation, or will try to make as careful an estimate of the expenses and returns a year ahead, as the State and National Governments, for instance, are in the habit of making yearly of their revenues and disbursements. The reason, too, is plain. There are only too many elements of uncertainty, too many unknown quantities, in the figures which have to serve as basis for the soil-tiller's calculations. Who can tell what the season will be—whether a favorable one or not? Who can foresee what accidents may befall the crop? Who can know what prices will be ruling—whether high or low? Many of the conditions that influence plant growth are yet shrouded in mystery. Even the individual

grower, who knows all the details of his environments, who is thoroughly acquainted with his soil and its treatment, his location and its special adaptabilities, his markets and their whims, etc., cannot, with entire safety, make a reliable estimate. If I undertake to make it for others, I can only do so under the assumption that the conditions of soil and market, etc., are such as I have advised to select, and such as represent a moderately favorable combination.

The soil-tiller's estimates, in fact, are seldom safe. The ruling emotion in the human heart is hope. It is just what stimulates our efforts and actions. Without it all would be stagnancy, despair, death. We are inclined to take a rosy view of the situation, and thus we usually rest our calculations on the possible combination of conditions that are all favorable, rather than on the far more probable mixture of favorable, unfavorable, and indifferent conditions. Sometimes the "carefully made" estimates may show a nice profit, but when the balance is drawn after the crop is all disposed of, the books may show an actual loss. The crop is an expensive one. For the person who has made an injudicious selection of environments, or for the careless manager, loss, in short, is not an impossibility. But it should not occur otherwise.

Still it may be well to aim high. We may set a mark somewhat below the possibilities of the crop and within reach and reason, and then try to hit it or at least to work as near to it as possible. Close watch of the development of the crops, of the prices, etc., will soon show us the causes of failures which seldom are entirely avoided in our first trials. With the causes once known to us, a little effort will soon enable us to find the proper remedies. "If at first you don't succeed, try, try again!"

In the following I give rough estimates of the outcome in growing the crop :—

ESTIMATED PROFITS OF THE SUMMER CROP GROWN BY THE OLD CULTURE.

EXPENSES PER ACRE.

To growing 25,000 plants under glass, seed included,	$35 00
" Rent of land,	15 00
" Manure and fertilizers, including application,	50 00
" Plowing, harrowing, marking,	8 00
" Setting the plants,	8 00
" Cultivating, handling, hilling,	12 00
" Gathering, trimming, washing, bunching,	25 00
" Packing and Packages,	25 00
" Cartage and Incidentals,	12 00
" Commission and transportation,	70 00
Total expenses,	$260 00

RETURNS.

By 1500 dozen bunches @ 30 cts,	$450 00
Deduct expenses,	260 00
Net profits,	$190 00

If the crop can be disposed of in a local market, to dealers or regular retail customers, the largest item in the expense account—commission and transportation, $70.00—can be saved, and nearly all of it added to the net profits. Possibly higher prices, also, may be secured for this early crop, so that it would not be so very extravagant, under these favorable circumstances, to figure on nearly $300 net profits from an acre of ground in early celery. If the grower can obtain such results, he is on the high road to success.

On the other hand, if he has to buy his plants, they may cost him $75.00 instead of $35.00. The land may be worth $500.00 an acre, bringing the rent up to $30.00 instead of $15.00. If the earthing up is all done with hand tools

instead of celery hilling machines, the cost of "cultivating," handling, hilling, may be many times the amount stated ($12.00). Possibly also there may happen to be a glut in the market, and your bunches sell for 25 or even 20 cents each. In short, if many unfavorable conditions should happen to work together, the profits may be all consumed to the last cent, and the grower will have to be thankful if he gets his expenses back and good pay for his own labor, even without a penny of clear profit.

ESTIMATED PROFITS OF THE SUMMER CROP GROWN BY THE NEW CULTURE.

EXPENSES PER ACRE.

To growing 115,000 plants, seed included,	$125 00
" Rent of land,	25 00
" Compost, including application,	75 00
" Fertilizers,	75 00
" Plowing, harrowing, marking,	10 00
" Setting the plants,	30 00
" Irrigating,	50 00
" Cultivating and weeding,	20 00
" Gathering, cleaning, bunching,	60 00
" Packing and packages,	80 00
" Cartage and incidentals,	45 00
" Commission and transportation,	325 00
Total expenses,	$920 00

RETURNS.

By 7000 dozen bunches @ 30 cts,	$2100 00
Deduct expenses,	920 00
Net profits	$1180 00

It will be seen that the crop, at first sight, appears to be exceedingly expensive; yet the net profits, when the accompanying conditions are right, prove to be correspondingly large. As in the case of the crop grown in the old way, the grower who has a near local market may possibly

sell his crop without having to pay commission and transportation expenses, and thus increase his profits materially; or he may have to buy his plants, and be satisfied with a smaller price than the one given in my estimate, and see his profits dwindle down. In all these estimates I allow about 25 per cent. of the plants set out for culls.

ESTIMATED PROFITS OF THE LATE CROP GROWN BY THE OLD CULTURE.

EXPENSES PER ACRE.

To growing 25,000 plants in open air,	$10 00
" Rent of land,	15 00
" Manure and fertilizers,	50 00
" Plowing, harrowing, marking,	8 00
" Setting the plants,	8 00
" Cultivating, handling, hilling,	12 00
" Storing in trenches or root houses,	50 00
" Trimming, washing, bunching,	25 00
" Packing and packages,	25 00
" Cartage and incidentals,	12 00
" Commission and transportation,	70 00
Total expenses,	$285 00

RETURNS.

By 1500 dozen bunches @ 30 cts.,	$450 00
Deduct expenses,	285 00
Net profits,	$165 00

The loss in wintering the crop, or part of the crop, is sometimes quite considerable. Often disease takes hold of the plants, and spreads rapidly even while they are in winter quarters, ruining a large part.

In growing the late crop by the "new culture," we will meet with difficulties in storing. It takes large storage capacities (one-fourth of an acre) to store the product of an acre of ground, and a great deal of time and labor. But

the profits are correspondingly large also, if the crop is good, and the product in demand.

ESTIMATED PROFITS OF THE LATE CROP GROWN BY THE NEW CULTURE.

EXPENSES PER ACRE.

To growing 115,000 plants outdoors,	$40 00
" Rent of land,	25 00
" Compost, including application,	75 00
" Fertilizers,	75 00
" Plowing, harrowing, marking,	10 00
" Setting the plants,	30 00
" Irrigating,	25 00
" Cultivating and weeding,	20 00
" Gathering and storing,	150 00
" Trimming, washing, bunching,	75 00
" Packing and packages,	100 00
" Cartage and incidentals,	40 00
" Commission and transportation,	285 00
Total expenses,	$950 00

RETURNS.

By 6000 dozen bunches @ 30 cts.,	$1800 00
Deduct expenses,	$950 00
Net profits,	$850 00

These are again subject to changes as already explained.

A FINAL WORD OF WARNING.

Now once more let me give a word of warning and caution. Don't let these figures tempt you. Don't try to begin on an acre scale. If you have never grown celery before, start in slowly, cautiously. It is safer to begin with a square rod than with an acre. Learn by experience, and when you have become familiar with the requirements of the crop, and are sure you can supply them, then is the time to embark more largely in this line of business.

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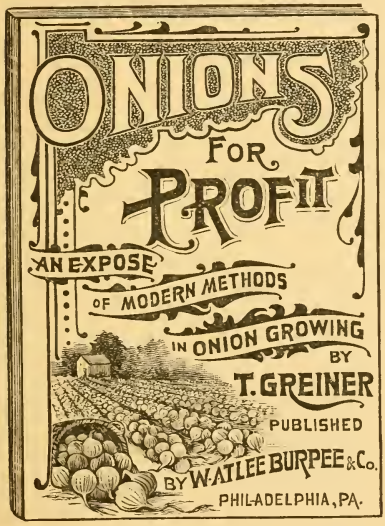

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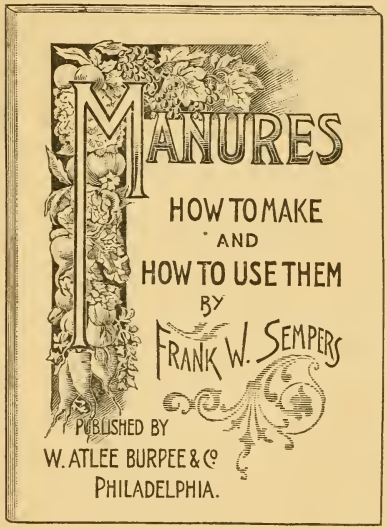

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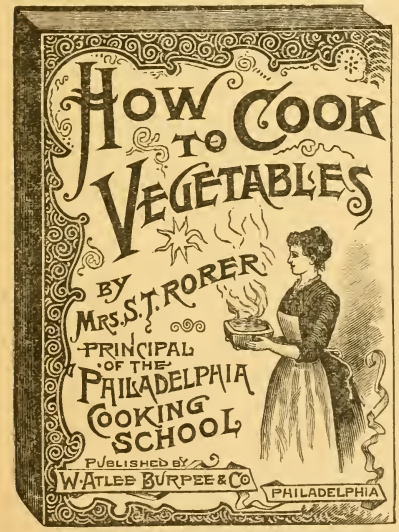

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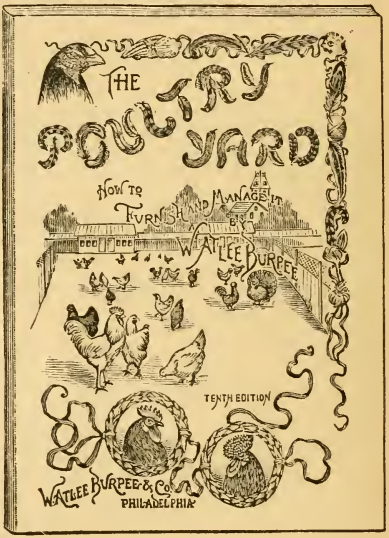

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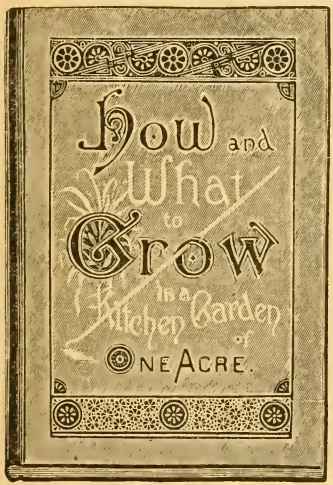

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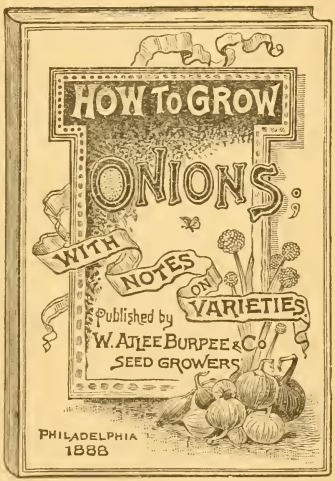

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